

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims

1. (Currently Amended) A method for static load balancing, comprising:
receiving a list of the data paths in the network adapter team, a total number of bytes transferred by the network adapter team, a load balancing share of each data path, and a number of bytes transferred on each data path;

for each data path in a network adapter team, computing a load balancing value by:
dividing the total number of bytes by the number of bytes transferred on the data path to generate a first value; and

multiplying the first value by the load balancing share of the data path;
determining a maximum value of the computed load balancing values; and
selecting a data path with the maximum value for use in routing data.

2. (Cancelled)

3. (Cancelled)

4. (Currently Amended) The method of claim [[2]] 1, wherein the load balancing share is provided by a user.

5. (Currently Amended) A method for dynamic load balancing, comprising:
computing an actual load balancing share for each data path in a network adapter team by
dividing a number of bytes transferred on that data path by a total number of bytes transferred by the network adapter team in a last time frame; and

for each data path,
determining whether a load balancing share for the data path in the last time frame
is less than the actual load balancing share for the data path; and
when the load balancing share is less than the actual load balancing share,
adjusting the load balancing share of the data path.

6. (Currently Amended) The method of claim 5, wherein adjusting the load balancing share further comprises:

computing a difference load balancing value for each data path in the network adapter team by subtracting the load balancing share of the data path from the actual load balancing share of the data path;

determining whether a difference between the load balancing share and the actual load balancing share is less than a change threshold; and

when the difference between the load balancing share and the actual load balancing share is less than the change threshold,

reducing the load balancing share of the data path;

selecting another data path based on the difference load balancing value of each data path; and

increasing the load balancing share of ~~another~~ the selected data path.

7. (Original) The method of claim 6, wherein the load balancing share of the data path in the network adapter team with a lowest difference load balancing value is increased, and wherein, if multiple data paths have the lowest difference load balancing value, a data path from the multiple data paths with a highest actual load balancing share is increased.

8. (Cancelled)

9. (Currently Amended) The method of claim ~~[[8]]~~ 6, wherein the actual load balancing share and the difference load balancing value are computed when a timer fires.

10. (Original) The method of claim 5, further comprising:
receiving a timer interval value, a change threshold value, and a load balancing change percent value.

11. (Currently Amended) The method of claim 5, further comprising:

receiving a list of data paths in the network adapter team, ~~[[a]]~~ the total number of bytes transferred by the network adapter team in ~~[[a]]~~ the last time frame, ~~[[a]]~~ the load balancing share of each data path in the last time frame, and a number of bytes transferred on each data path in the last time frame.

12. (Currently Amended) A method for failover processing, comprising:
intercepting a command issued to a target;
determining whether ~~[[a]]~~ the command ~~may be~~ is capable of being routed through a first network adapter in a network adapter team to the target;
routing the command through the first network adapter in response to determining that the command ~~may be~~ is capable of being routed through the first network adapter; ~~[[and]]~~
routing the command through a second network adapter in the network adapter team in response to determining that the command ~~may not be~~ is not capable of being routed through the first network adapter; and
determining whether to switch between failover mode and failover and load balancing mode based on load balancing shares of data paths between the network adapters in the network adapter team and the target, wherein, when one data path has a hundred percent load balancing share, then failover mode is used.

13. (Currently Amended) The method of claim 12, wherein the determination of whether a command ~~may be~~ is capable of being routed through a first network adapter determines whether an indication that the first network adapter failed was received.

14. (Original) The method of claim 12, wherein routing the command further comprises:
forwarding the command to a low level driver with an indication of the selected network adapter.

15. (Original) The method of claim 12, further comprising:
performing load balancing between the first network adapter and the second network adapter when both network adapters are available.

16. (Currently Amended) A system for static load balancing, comprising:
multiple data paths forming a network adapter team; and
circuitry, in a load balancing component that is coupled to a bus, operable to:
receive a list of the data paths in the network adapter team, a total number of
bytes transferred by the network adapter team, a load balancing share of each data path, and a
number of bytes transferred on each data path;
for each data path in a network adapter team, compute a load balancing value by:
dividing the total number of bytes by the number of bytes transferred on
the data path to generate a first value; and
multiplying the first value by the load balancing share of the data path;
determine a maximum value of the computed load balancing values; and
select a data path with the maximum value for use in routing data.
17. (Cancelled)
18. (Cancelled)
19. (Currently Amended) The system of claim ~~[[17]]~~ 16, wherein the load balancing share is provided by a user.
20. (Currently Amended) A system for dynamic load balancing, comprising:
multiple data paths forming a network adapter team; and
circuitry, in a load balancing component that is coupled to a bus, operable to:
compute an actual load balancing share for each data path in a network adapter team by dividing a number of bytes transferred on that data path by a total number of bytes transferred by the network adapter team in a last time frame; and
for each data path,
determine whether a load balancing share for the data path in the last time frame is less than the actual load balancing share for the data path; and

when the load balancing share is less than the actual load balancing share, adjust the load balancing share of the data path.

21. (Currently Amended) The system of claim 20, wherein the circuitry operable to adjust the load balancing share is operable to:

compute a difference load balancing value for each data path in the network adapter team by subtracting the load balancing share of the data path from the actual load balancing share of the data path;

determine whether a difference between the load balancing share and the actual load balancing share is less than a change threshold; and

when the difference between the load balancing share and the actual load balancing share is less than the change threshold,

reduce the load balancing share of the data path;

select another data path based on the difference load balancing value of each data path; and

increase the load balancing share of ~~another~~ the selected data path.

22. (Original) The system of claim 21, wherein the load balancing share of the data path in the network adapter team with a lowest difference load balancing value is increased, and wherein, if multiple data paths have the lowest difference load balancing value, a data path from the multiple data paths with a highest actual load balancing share is increased.

23. (Cancelled)

24. (Currently Amended) The system of claim ~~[[23]]~~ 21, wherein the actual load balancing share and the difference load balancing value are computed when a timer fires.

25. (Original) The system of claim 20, wherein the circuitry is operable to:
receive a timer interval value, a change threshold value, and a load balancing change percent value.

26. (Currently Amended) The system of claim 20, wherein the circuitry is operable to:

receive a list of data paths in the network adapter team, ~~[[a]]~~ the total number of bytes transferred by the network adapter team in ~~[[a]]~~ the last time frame, ~~[[a]]~~ the load balancing share of each data path in the last time frame, and a number of bytes transferred on each data path in the last time frame.

27. (Currently Amended) A system for failover processing, comprising:

a first network adapter in a network adapter team;

a second network adapter in the network adapter team; and

circuitry, in a failover component coupled to a bus, operable to:

intercept a command issued to a target;

determine whether ~~[[a]]~~ the command ~~may be~~ is capable of being routed through ~~[[a]]~~ the first network adapter to the target;

route the command through the first network adapter in response to determining that the command ~~may be~~ is capable of being routed through the first network adapter; ~~[[and]]~~

route the command through ~~[[a]]~~ the second network adapter in response to determining that the command ~~may not be~~ is not capable of being routed through the first network adapter; and

determine whether to switch between failover mode and failover and load balancing mode based on load balancing shares of data paths between the network adapters in the network adapter team and the target, wherein, when one data path has a hundred percent load balancing share, then failover mode is used.

28. (Currently Amended) The system of claim 27, wherein the circuitry operable to determine whether the command ~~may be~~ is capable of being routed through the first network adapter is operable to determine whether an indication that the first network adapter failed was received.

29. (Original) The system of claim 27, wherein the circuitry to route the command is operable to:

forward the command to a low level driver with an indication of the selected network adapter.

30. (Original) The system of claim 27, wherein the circuitry is operable to:
perform load balancing between the first network adapter and the second network adapter when both network adapters are available.

31. (Currently Amended) An article of manufacture for static load balancing, wherein the article of manufacture is operable to:

receive a list of the data paths in the network adapter team, a total number of bytes transferred by the network adapter team, a load balancing share of each data path, and a number of bytes transferred on each data path

for each data path in a network adapter team, compute a load balancing value by:

dividing the total number of bytes by the number of bytes transferred on the data path to generate a first value; and

multiplying the first value by the load balancing share of the data path;

determine a maximum value of the computed load balancing values; and

select a data path with the maximum value for use in routing data.

32. (Cancelled)

33. (Cancelled)

34. (Currently Amended) The article of manufacture of claim ~~[[32]]~~ 31, wherein the load balancing share is provided by a user.

35. (Currently Amended) An article of manufacture for dynamic load balancing, wherein the article of manufacture is operable to:

compute an actual load balancing share for each data path in a network adapter team by dividing a number of bytes transferred on that data path by a total number of bytes transferred by the network adapter team in a last time frame; and

for each data path,

determine whether a load balancing share for the data path in the last time frame is less than the actual load balancing share for the data path; and

when the load balancing share is less than the actual load balancing share, adjust the load balancing share of the data path.

36. (Currently Amended) The article of manufacture of claim 35, wherein the article of manufacture operable to adjust the load balancing share is operable to:

compute a difference load balancing value for each data path in the network adapter team by subtracting the load balancing share of the data path from the actual load balancing share of the data path;

determine whether a difference between the load balancing share and the actual load balancing share is less than a change threshold; and

when the difference between the load balancing share and the actual load balancing share is less than the change threshold,

reduce the load balancing share of the data path;

select another data path based on the difference load balancing value of each data path; and

increase the load balancing share of ~~another~~ the selected data path.

37. (Original) The article of manufacture of claim 36, wherein the load balancing share of the data path in the network adapter team with a lowest difference load balancing value is increased, and wherein, if multiple data paths have the lowest difference load balancing value, a data path from the multiple data paths with a highest actual load balancing share is increased.

38. (Cancelled)

39. (Currently Amended) The article of manufacture of claim [[38]] 36, wherein the actual load balancing share and the difference load balancing value are computed when a timer fires.

40. (Original) The article of manufacture of claim 35, wherein the article of manufacture is operable to:

receive a timer interval value, a change threshold value, and a load balancing change percent value.

41. (Currently Amended) The article of manufacture of claim 35, wherein the article of manufacture is operable to:

receive a list of data paths in the network adapter team, [[a]] the total number of bytes transferred by the network adapter team in [[a]] the last time frame, [[a]] the load balancing share of each data path in the last time frame, and a number of bytes transferred on each data path in the last time frame.

42. (Currently Amended) An article of manufacture for failover processing, wherein the article of manufacture is operable to:

intercept a command issued to a target;

determine whether [[a]] the command ~~may be~~ is capable of being routed through a first network adapter in a network adapter team to the target;

route the command through the first network adapter in response to determining that the command ~~may be~~ is capable of being routed through the first network adapter; [[and]]

route the command through a second network adapter in the network adapter team in response to determining that the command ~~may not be~~ is not capable of being routed through the first network adapter; and

determine whether to switch between failover mode and failover and load balancing mode based on load balancing shares of data paths between the network adapters in the network adapter team and the target, wherein, when one data path has a hundred percent load balancing share, then failover mode is used.

43. (Currently Amended) The article of manufacture of claim 42, wherein the article of manufacture operable to determine whether a command ~~may be~~ is capable of being routed through a first network adapter is operable to determine whether an indication that the first network adapter failed was received.

44. (Original) The article of manufacture of claim 42, wherein the article of manufacture operable to route the command is operable to:
forward the command to a low level driver with an indication of the selected network adapter.

45. (Original) The article of manufacture of claim 42, wherein the article of manufacture is operable to:
perform load balancing between the first network adapter and the second network adapter when both network adapters are available.